



comTM
SUR

the missing piece of CCTV

**COM-SURTM EMPOWERS PEOPLE TO ACHIEVE
OPTIMAL OUTCOMES FROM SURVEILLANCE VIDEO,
LEADING TO A SAFER WORLD.**



**CCTV VIDEO DATA
SIZE REDUCTION
THE COM-SUR™
'WAY'**

OVERVIEW

Video surveillance is rapidly increasing worldwide, with an estimated 45 billion cameras in use by 2025 (Motorola Avigilon report – 2020), equivalent to six cameras per person on earth. IHS Markit projects that new security cameras have generated over 2,500 petabytes of data daily since late 2019. The trend towards ubiquitous and data-hungry cameras is expected to accelerate.

The dramatic growth of surveillance video can be attributed to a variety of factors. Users' needs, such as for security or productivity, are just one factor. Improvements in camera technology, imaging, and resolution have also played a significant role in driving this trend.

Technologies like video analytics, facial recognition, encryption, and image

enhancement contribute to the increasing demand for data storage. However, storing video for a long period of time poses significant challenges, especially when required by law. Although 30 days of storage is a common industry standard, it is arbitrary and lacks scientific justification. This approach risks the permanent loss of crucial information and evidence.

To manage the massive storage requirements of video surveillance, the industry has adopted compression standards, notably H.264 followed by its successor H.265 in 2016. H.264 compresses frames using block-oriented, motion-compensation-based methods, while H.265 improves upon this and reduces video data size by nearly 50%. While new standards will continue to emerge, the ever-increasing number of cameras and demand for higher resolution will still drive storage requirements upwards, despite compression efforts.

Enter COM-SUR

COM-SUR is revolutionizing data management by providing an elegant and user-friendly solution. It not only reduces storage requirements from terabytes to gigabytes, but also offers a cost-effective disaster recovery mechanism. With COM-SUR, auditing dense surveillance video footage daily becomes an easy-to-adopt standard operating procedure.

A FEW LINES ABOUT COM-SUR:

COM-SUR is the world's only CCTV video footage auditing, smart backup, and standardized intelligent incident reporting software, addressing the three missing pieces of CCTV. It is a force multiplier, providing a complete workflow solution. As Google was the missing piece of the internet, COM-SUR is the missing piece of CCTV, enabling easy interaction with surveillance video footage, just as MS Office provides universal appeal for documents, presentations, and communication. COM-SUR optimizes value and insights from surveillance video, promoting safety and productivity in various use cases from airports to zoos (A to Z). Check out the short and interesting video ahead to learn more about how COM-SUR works.

HOW COM-SUR SMARTLY REDUCES 'VIDEO' STORAGE SIZE

The uniqueness of COM-SUR is that irrespective of the FPS (Frames per Second) of the video feed and/or other parameters, COM-SUR follows a very smart method to reduce the storage size of the 'video'.

As is known, video is made up of frames (I, P, and B frames). Feature films are generally shot and viewed at 24 FPS. Frame rates can be of different kinds and can even go up to 240 FPS. However, what is common and more important for this document is that any frame 'rate' is always 'per' second, and it is this 'second' that COM-SUR 'captures' very smartly as a screenshot effortlessly and automatically, once programmed.

Since COM-SUR captures the consolidated 'moment' of 'that' one second (think of this one 'second' as a 'finished product', of 'spare parts' comprising of the I, P, and B frames coming together in one second), it means that the 'unnecessary' frames have been taken away (not literally though) without missing any vital information so to speak. This method reduces the data size drastically, which is even further reduced, when multiple cameras are being viewed on a monitor. For example, if 16 cameras are viewed in a 4x4 grid, there is further reduction of the storage size sixteen times, since the screenshot would have captured all 16 cameras as a single image.

It may be kept in mind that even with a little loss of quality (hardly material for the intended applications) between the actual video and the screenshots, the benefits that accrue to the user are numerous - ease of auditing; gaining actionable insights therefrom; longer retention periods of data, and creation of well categorized digital libraries of significant findings (which can be stored for years to come and be recovered at the click of a button). Again, since no

suggestion is being made to replace the actual video with screenshots, COM-SUR acts as a wonderful supportive technology.

PUSH AUDIT

Further on in this document, the angle of 'Push Audit' is explained, which is yet another wonderful feature introduced by COM-SUR. In this case, COM-SUR reduces the storage requirements even more and creates a single video depicting cameras and 'pushes' the video available to the user at an interval of every four hours. This way the user is always in the know of what's been happening regularly.

'CAPTURING' THE SCREENSHOT OF A 'WINDOW'

To better understand how COM-SUR reduces the storage size, it is imperative to understand the concept of a 'Window'. COM-SUR captures screenshots of the 'Window' in which the video feed is displayed. Therefore, if 16 cameras are displayed in a 'Window', COM-SUR will capture screenshots of those 16 cameras as a single image. If ONE camera is displayed in a 'Window', COM-SUR will capture screenshots of that ONE camera. Essentially therefore, "what you see is what you get". However, COM-SUR's screenshots are very 'smartly' captured in the background. This means that once COM-SUR has been programmed to begin the capturing activity, even if one were to use the computer to browse the internet for example, COM-SUR will not capture the screen facing the user.

COM-SUR will capture only those 'Windows' which have been 'locked' by it to capture. Thus, the user can continue his working on the computer without fear of loss of privacy or capture of sensitive/confidential data. Now, while the time interval between each such screenshot is recommended to be of that ONE second, which has been explained earlier, COM-SUR allows complete flexibility for the user to determine the time interval between two screenshots. This user decision would depend on the criticality of the location of where the cameras are placed, or the time of the day and/or the activity in the cameras.

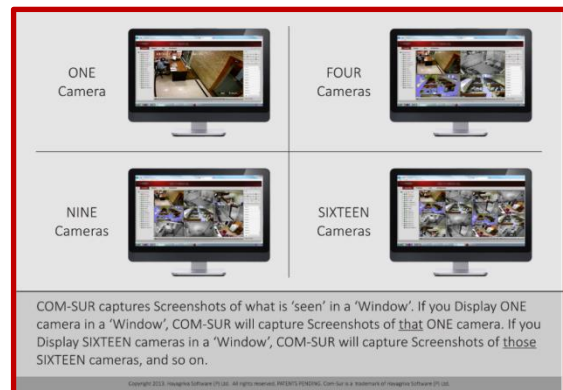
Well established industry practices indicate that users generally view anywhere between 1 to 32 cameras on a monitor, the display and management of which is managed by the video management system, or a browser.

EXPLAINING A 'WINDOW'

A 'Window' is essentially the display input that brings forth, and shows the user the video feed on a monitor.

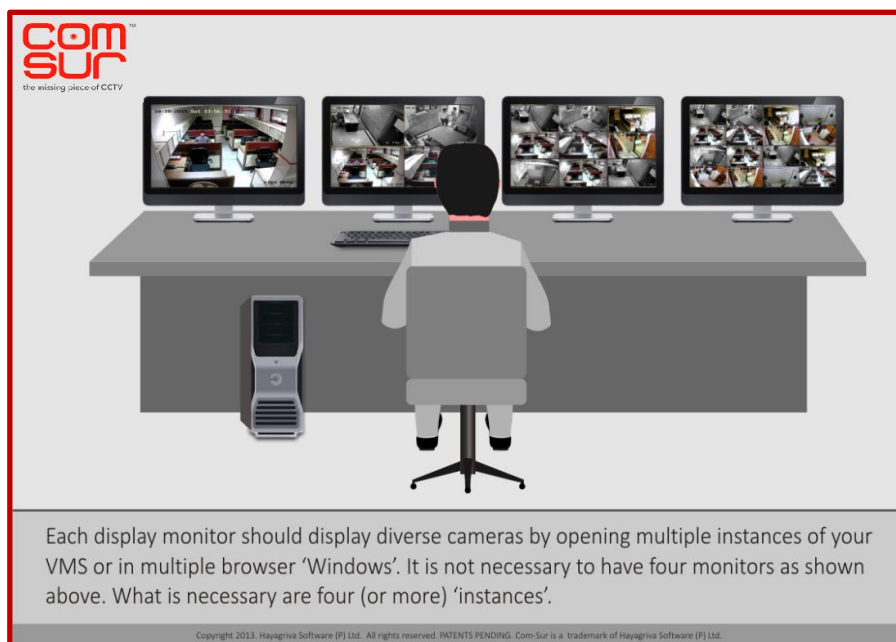
A 'Window' can be that of a VMS/Browser/Media Player.

The number of cameras per 'Window' are user-defined; for example: 1, 4, 9, 16, 25, 32



TYPICAL SET UP

Typically, operators view diverse cameras using 3 to 4 monitors.



COM-SUR'S SCREENSHOTS' STORAGE SIZE

Having understood how COM-SUR hugely reduces the storage size, let us look at the storage sizes of the screenshots captured by COM-SUR with respect to the number of cameras displayed in a 'Window'.

It may be noted that irrespective of the type of cameras, i.e., IP/AHD/Analog, the size per screenshot will remain more or less the same.:

GENERAL INFORMATION ABOUT THE SIZE OF THE SCREENSHOTS CAPTURED BY COM-SUR

Cameras Displayed in a 'Window'	Per Screenshot file size	Storage size requirements	
		For 1 day	For 30 days
1	175 KB	14.5 GB	435 GB
4	250 KB	21.0 GB	630 GB
9	275 KB	23.0 GB	690 GB
16	300 KB	25.0 GB	750 GB

Notes:

1. The more the number of cameras in one screenshot, the lesser is the overall requirement for storage.
2. The average size of each screenshot captured is approximately 175 kb - 300 kb depending on the number of cameras captured in a screenshot. However, other criteria such as image complexity, screen resolution, etc. may affect the size to some extent.
3. If the user captures screenshots at an interval of TWO seconds instead of ONE second, the data size will reduce by 50%, without compromising too much on loss of any frame.

STORAGE SIZE COMPARISON BETWEEN
COM-SUR AND CCTV CAMERAS (4K/2MP/D1
RESOLUTIONS)

To see a detailed storage size comparison between COM-SUR (screenshots data size and push audit video data size) and CCTV cameras (4K/2MP/D1 resolution), please click the link below:

<https://www.comsur.biz/Data Size Comparison - The COM-SUR Way.pdf>

COM-SUR's push audit plug-in and the video it generates, has been explained further in this document.

HOW DOES COM-SUR WORK?

ENGLISH

<https://www.youtube.com/watch?v=V JEUvgG1wU>

HINDI

<https://www.youtube.com/watch?v=TGNDngc96mM>

COM-SUR'S 'PUSH AUDIT' PLUGIN – FURTHER
REDUCTION OF SIZE, MULTIPLE TIME INTERVAL
CHOICES, AND READILY AVAILABLE VIDEO EVERY
FOUR HOURS

Pretty much like 'push email' COM-SUR offers a unique add-on (as a plug-in), where screenshots captured by COM-SUR are re-converted into video, further reduced in size, and 'pushed' to the user's account with Google Drive, OneDrive, and Dropbox, every four hours.

Another great benefit that this plug-in offers is that it allows the user to make multiple selections of the interval between two screenshots.

For example, the user can choose to:

- 1) Capture screenshots at every ONE second from 7.00 AM to 4.00 PM (when there is peak activity).
- 2) Capture screenshots at every TWO seconds from 4.00 PM to Midnight (when there is lesser activity).
- 3) Capture screenshots at every FIVE seconds from Midnight to 7.00 AM (when there is very little or no activity).

This solution is especially useful for organizations that have several sites and wish to centralize their video surveillance activities without making huge investments on resources like hardware, manpower, connectivity and associated infrastructure. In this case, videos are 'pushed' from multiple sites to a central location every FOUR hours. Since the video size is tiny, there is very little consumption of bandwidth, as against the case of streaming the actual video from the DVR/NVR to a central location.

The team at the central location receives the links to the respective videos. They can then audit these videos either by downloading from the link, or by playing the videos from the respective link itself. This facility of playing videos from links is provided by Google Drive, OneDrive, and Dropbox.

Here is an explanation of how the team can access the respective videos from each of these services:

Google Drive – The team will be able to play the entire video from the respective Google Drive link opened in a browser. The team can also download the video from the link.

OneDrive - The team will be able to play the entire video from the respective OneDrive link opened in a browser. The team can also download the video from the link.

Dropbox – The team will be able to play a 15-minute preview of the video from the respective Dropbox link opened in a browser. In order to access the entire video, Dropbox offers the facility of downloading the video from the link, as well as adding the link to the team's Dropbox account (this can be done by logging in to the respective account).

If you need to see how a 4-hour video looks like with multiple cameras, you can write to us at pushaudit@comsur.biz.